THE AMENDMENTS

In the Claims

1. (currently amended) A method for inducing or enhancing the threshold voltage of an electrophoretic display, which method comprises

a) preparing an electrophoretic fluid comprising charged pigment-containing microparticles dispersed in a dielectric solvent or solvent mixture wherein said pigment-containing microparticles comprise a hard shell formed from a protective colloid; and ~~adding a threshold promoter into an electrophoretic fluid which comprises charged pigment particles or pigment-containing microparticles dispersed in a dielectric solvent or solvent mixture, wherein said~~

b) adding to said electrophoretic fluid a threshold promoter ~~is~~ represented by one of the following formulas:

$$R—[Q—L—(X)_m]_q \qquad (T\text{-}1)$$

$$R—[Q—L—X—Q'—(L'—Y)_m]_q \qquad (T\text{-}2)$$

$$R—[Q—L—(X—Q'—L'—Y)_m]_q \qquad (T\text{-}3)$$

$$[(X)_m—L—Q]_q—R—[Q'—L'—(Y)_{m'}]_{q'} \qquad (T\text{-}4)$$

wherein:

m and m' are independently natural numbers which are ≥1;

q and q' are independently natural numbers which are ≥1;

R is a halogenated group or a halogenated polymeric or oligomeric chain;

Q and L or Q' and L' together forming a linking chain; and

X and Y are independently functional groups capable of forming hydrogen bonding, acid-base interaction, donor-acceptor interaction, metal-ligand interaction or Coulombic interaction.

2. (currently amended) The method of Claim 1 wherein Q in –Q-L- ~~or~~ and Q' in -Q'-L'- ~~is~~ are independently absent, ether (-O -), thioether (-S -), amide (-CON<, -CONR^{12}- or -R^{12}NCO-), imide [(-CO)$_2$N-], urea (-R^{12}NCONR^{13}-), thiourea (-R^{12}NCSNR^{13}-), urethane (-OCONR^{12}- or –R^{12}NCOO-), thiourethane (-OCSNR^{12}- or -R^{12}NCSO-), ester (-COO- or –OOC-), carbonate [-OC(O)O-], imine (=N-) or amine (-NR^{12}-) wherein R^{12} and R^{13} are independently hydrogen, alkyl, aryl, alkylaryl, polyether or a derivative thereof.

3. (original) The method of Claim 1 wherein m and m' are independently 1 or 2.

4. (original) The method of Claim 1 wherein q and q' are independently 1 or 2.

5. (currently amended) The method of Claim 1 wherein X and Y are independently –OH, -SH, -NH$_2$, -NH-, =N-, >N$^+$<, =N$^+$<, -CO-, -COO-, -OCO-, -COO$^-$, -COOH, -COOCO-, -O-, -CONR^8-, -CONH$_2$, -OCONR^8-, -NR^{8}COR^9, -R^{8}NCONR^9-, -CONR^{8}CO-, -OCOO-, -SO-, -SO$_2$-, -SO$_2^-$, -SO$_3^-$, -SO$_4^-$, -SO$_2$H, -SO$_3$H, -PO$_4$H$_2$, -PO$_4^{-2}$, -PO$_4$H$^-$, -PO$_3$H$_2$, -PO$_3$H$^-$, -SO$_2$NH-, -SO$_2$NR^8-, a pyridinium or quaternary ammonium salt, metal or metal ion or a chelated derivative thereof, ~~(in which~~ wherein R^8 and R^9 are independently hydrogen, alkyl or fluorinated alkyl of 1 to 30 carbon ~~atoms)~~ atoms.

6. (currently amended) The method of Claim 5 wherein X or Y is a pyridinium salt formed with a counter ion selected from the group consisting of F$^-$, Cl$^-$, Br$^-$, I$^-$, NO$_3^-$, NO$_2^-$, CO$_3^=$, SO$_3^=$, SO$_4^=$, PO$_3^=$, PO$_4^{3-}$, MnO$_4^-$, Cr$_2$O$_7^=$, CrO$_3^=$, BF$_4^-$, PF$_6^-$, AsF$_6^-$, SbF$_6^-$, optionally fluorinated aliphatic carboxylates, optionally fluorinated ~~or~~ sulfonates, anions of optionally fluorinated sulfonyl imides, anions of optionally fluorinated aromatic carboxylates, anions of optionally fluorinated ~~or~~ sulfonates, ~~and~~ fluoropolyether substituted carboxylate, and fluoropolyether substituted ~~or~~ sulfonates.

7. (original) The method of Claim 6 wherein said optionally fluorinated aliphatic sulfonate is $C_aH_bF_{(2a+1-b)}SO_3^-$ wherein a is 1-30 and b is 0-61.

8. (previously presented) The method of Claim 6 wherein said optionally fluorinated aliphatic carboxylate is $C_aH_bF_{(2a+1-b)}CO_2^-$ wherein a is 1-30 and b is 0-61.

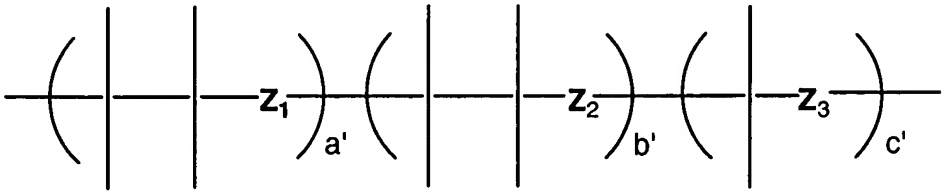
9. (currently amended) The method of Claim 6 wherein said ~~counterion~~ counter ion is $F(C_3F_6O)_dCF(CF_3)CO_2^-$, $F(C_3F_6O)_dCF_2CF_2CO_2^-$, $CF_3O(C_2F_4O)_dCF_2CO_2^-$,

$F(C_2F_4O)_dCF_2CO_2^-$, $F(C_3F_6O)_dCF(CF_3)SO_3^-$, $F(C_3F_6O)_dCF_2CF_2SO_3^-$, $CF_3O(C_2F_4O)_dCF_2SO_3^-$ or $F(C_2F_4O)_dCF_2SO_3^-$ wherein d is 1-20.

10. (currently amended) The method of Claim 5 wherein said pyridinium salt is formed with an anion of ~~Krytox® acid~~ $F(C_3F_6O)_yCF(CF_3)COOH$.

11. (withdrawn) The method of Claim 1 wherein R is fluorinated alkyl or fluorinated aryl.

12. (withdrawn and currently amended) The method of Claim 1 wherein R is a polymeric or oligomeric chain represented by the following formula:



(R)

wherein the open and not designated substituent positions ~~(not designated)~~ on the main chain are independently selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, aryl, alkylaryl, fluoroalkyl, fluoroalkenyl, fluoroaryl, fluoroalkylaryl, $-OR^{10}$, $OCOR^{10}$, $-COOR^{10}$, $-CONR^{10}R^{11}$ ~~(wherein R^{10} and R^{11} are independently hydrogen, alkyl, aryl, alkylaryl, fluoroalkyl, fluoroaryl, fluoroalkylaryl or fluorinated polyether)~~ and substituted derivatives thereof, wherein R^{10} and R^{11} are independently hydrogen, alkyl, aryl, alkylaryl, fluoroalkyl, fluoroaryl, fluoroalkylaryl or fluorinated polyether;
Z_1, Z_2, and Z_3 are independently oxygen or absent; and
a', b' and c' are the weight fractions of the corresponding repeating units and are independently in the range of 0-1 with their sum no greater than 1.

13. (withdrawn and currently amended) The method of Claim 12 wherein the open substituent positions are independently fluorine or fluorinated alkyl.

14. (original) The method of Claim 1 wherein said threshold promoter is represented by Formula T-1:
wherein
m is 1 or 2;
q is 1 or 2;

Q is absent, an amide, urea or urethane moiety;
L is a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms; and
X is hydroxyl, amino or $-NR^8COR^9$ wherein R^8 and R^9 are independently hydrogen, alkyl or fluorinated alkyl.

15. (withdrawn) The method of Claim 14 wherein R is a fluorinated alkyl.

16. (original) The method of Claim 14 wherein R is a fluoropolyether.

17. (withdrawn) The method of Claim 14 wherein R is a polymeric or oligomeric chain of Formula (R).

18. (withdrawn and currently amended) The method of Claim 17 wherein the open substituent positions on the main chain of Formula (R) are independently fluorine or fluorinated alkyl.

19. (original) The method of Claim 14 wherein m is 2, q is 1, L is a straight or branched alkylene or alkylphenylene chain optionally interrupted by one or more nitrogen atoms.

20. (original) The method of Claim 19 wherein L is a straight or branched alkylene chain optionally interrupted by one or more nitrogen atoms.

21. (withdrawn) The method of Claim 1 wherein said threshold promoter is represented by Formula T-2:
wherein
Q and Q' are independently absent, an amide, urea or urethane moiety;
L and L' are independently a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain, optionally interrupted by one or more heteroatoms;
X is a pyridinium ion;
Y is –OH or amino;
m is 1 or 2; and

q is 1 or 2.

22. (withdrawn) The method of Claim 21 wherein R is a fluorinated alkyl.

23. (withdrawn) The method of Claim 21 wherein R is a fluoropolyether.

24. (withdrawn) The method of Claim 21 wherein R is a polymeric or oligomeric chain of Formula (R).

25. (withdrawn and currently amended) The method of Claim 24 wherein the open substituent positions on the main chain of Formula (R) are independently fluorine or fluorinated alkyl.

26. (withdrawn) The method of Claim 21 wherein L and L' are independently a straight or branched alkylene chain optionally interrupted by one or more nitrogen atoms.

27. (withdrawn) The method of Claim 21 wherein Y is –OH.

28. (currently amended) The method of Claim 1 wherein said threshold promoter is a ~~pyiridium~~ pyridinium salt.

29. (currently amended) The method of Claim 28 wherein said pyridinium salt has a ~~counterion~~ counter ion selected from the group consisting of $C_aF_{2a+1}SO_3^-$, $F(C_3F_6O)_dCF(CF_3)CO_2^-$ and $F(C_2F_4O)_dCF_2CO_2^-$ in which a is 1-12 and d is 1-20.

30. (currently amended) An electrophoretic fluid comprising charged ~~pigment particles or~~ pigment-containing microparticles dispersed in a dielectric solvent or solvent mixture and a threshold promoter of the following formula:

$$R—[Q—L—(X)_m]_q \qquad (T\text{-}1)$$

$$R—[Q—L—X—Q'—(L'—Y)_m]_q \qquad (T\text{-}2)$$

$$R—[Q—L—(X—Q'—L'—Y)_m]_q \qquad (T\text{-}3)$$

$$[(X)_m—L—Q]_q—R—[Q'—L'—(Y)_{m'}]_{q'} \qquad (T\text{-}4)$$

wherein:

m and m' are independently natural numbers which are ≥1;

q and q' are independently natural numbers which are ≥1;

R is a halogenated group or a halogenated polymeric or oligomeric chain;

Q and L or Q' and L' together forming a linking chain; and

X and Y are independently functional groups capable of forming hydrogen bonding, acid-base interaction, donor-acceptor interaction, metal-ligand interaction or Coulombic interaction, wherein said pigment-containing microparticles comprise a hard shell formed from a protective colloid.

31. (original) The electrophoretic fluid Claim 30 wherein said threshold promoter is represented by Formula T-1:

wherein

m is 1 or 2;

q is 1 or 2;

Q is absent, an amide, urea or urethane moiety;

L is a straight or branched alkylene, alkylphenylene, fluorinated alkylene, or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms; and

X is hydroxyl, amino or $-NR^8COR^9$ wherein R^8 and R^9 are independently hydrogen, alkyl or fluorinated alkyl.

32. (withdrawn) The electrophoretic fluid of Claim 31 wherein R is a fluorinated alkyl.

33. (previously presented) The electrophoretic fluid of Claim 31 wherein R is a fluoropolyether.

34. (withdrawn) The electrophoretic fluid of Claim 31 wherein R is a polymeric or oligomeric chain of Formula (R).

35. (withdrawn and currently amended) The electrophoretic fluid of Claim 34 wherein the open substituent positions on the main chain of Formula (R) are independently fluorine or fluorinated alkyl.

36. (original) The electrophoretic fluid of Claim 31 wherein m is 2, q is 1, L is a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more nitrogen atoms.

37. (previously presented) The electrophoretic fluid of Claim 36 wherein L is a straight or branched alkylene chain optionally interrupted by one or more nitrogen atoms.

38. (withdrawn) The electrophoretic fluid of Claim 30 wherein said threshold promoter is represented by Formula T-2:

wherein

Q and Q' are independently absent, an amide, urea or urethane moiety;

L and L' are independently a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms;

X is a pyridinium ion;

Y is –OH or amino;

m is 1 or 2; and

q is 1 or 2.

39. (withdrawn) The electrophoretic fluid of Claim 38 wherein R is a fluorinated alkyl.

40. (withdrawn) The electrophoretic fluid of Claim 38 wherein R is a fluoropolyether.

41. (withdrawn) The electrophoretic fluid of Claim 38 wherein R is a polymeric or oligomeric chain of Formula (R).

42. (withdrawn and currently amended) The electrophoretic fluid of Claim 41 wherein the open substituent positions on the main chain of Formula (R) are <u>independently</u> fluorine or fluorinated alkyl.

43. (withdrawn) The electrophoretic fluid of Claim 38 wherein Y is –OH.

44. (withdrawn) The electrophoretic fluid of Claim 38 wherein said pyiridium ion is reacted with a counterion selected from the group consisting of $C_aF_{2a+1}SO_3^-$, $F(C_3F_6O)_dCF(CF_3)CO_2^-$ and $F(C_2F_4O)_dCF_2CO_2^-$ in which a is 1-12 and d is 1-20.

45. (currently amended) The electrophoretic fluid of Claim 30 wherein the threshold promoter is present in the amount of from about 0.1% by weight to about 20% by weight based upon the total amount of ~~pigment particles~~ the pigment-containing microparticles.

46. (currently amended) The electrophoretic fluid of Claim 45 wherein the threshold promoter is present in the amount of from about 0.2% by weight to about 5% by weight based upon the total amount of ~~pigment particles~~ the pigment-containing microparticles.

47. (currently amended) The electrophoretic fluid of Claim 30 wherein said ~~pigment particles are white pigment particles~~ pigment-containing microparticles are of the white color.

48. (original) The electrophoretic fluid of Claim 30 wherein said dielectric solvent is a halogenated solvent.

49. (original) The electrophoretic fluid of Claim 48 wherein said dielectric solvent is a fluorinated solvent.

50. (original) The electrophoretic fluid of Claim 49 wherein said dielectric solvent is a perfluorinated solvent.

51. (currently amended) The electrophoretic fluid of Claim 30 wherein said threshold promoter is adsorbed or chemically bonded on the surface of the ~~particles~~ pigment-containing microparticles.

52. (currently amended) The electrophoretic fluid of Claim 30 wherein said threshold promoter is adsorbed or chemically bonded on the surface of an electrode ~~conductor~~ layer.

53. (original) The electrophoretic fluid of Claim 30 wherein said threshold promoter is adsorbed or chemically bonded on the surface of an electrode protection layer.

54. (previously presented) The electrophoretic fluid of Claim 30 wherein said dielectric solvent or solvent mixture is colored by a Si phthalocyanine or naphthalocyanine dye, a Cu phthalocyanine or naphthalocyanine dye or a mixture thereof.

55. (currently amended) An electrophoretic display comprising display cells filled with an electrophoretic fluid comprising charged ~~pigment particles or~~ pigment-containing microparticles dispersed in a dielectric solvent or solvent mixture and a threshold voltage promoter of the formula:

$$R—[Q—L—(X)_m]_q \qquad (T\text{-}1)$$

$$R—[Q—L—X—Q'—(L'—Y)_m]_q \qquad (T\text{-}2)$$

$$R—[Q—L—(X—Q'—L'—Y)_m]_q \qquad (T\text{-}3)$$

$$[(X)_m—L—Q]_q—R—[Q'—L'—(Y)_{m'}]_{q'} \qquad (T\text{-}4)$$

wherein:

m and m' are independently natural numbers which are ≥1;

q and q' are independently natural numbers which are ≥1;

R is a halogenated group or a halogenated polymeric or oligomeric chain;

Q and L or Q' and L' together forming a linking chain; and

X and Y are independently functional groups capable of forming hydrogen bonding, acid-base interaction, donor-acceptor interaction, metal-ligand interaction or Coulombic interaction, wherein said pigment-containing microparticles comprise a hard shell formed from a protective colloid.

56. (previously presented) The electrophoretic display of Claim 55 wherein said threshold promoter is represented by Formula T-1:

wherein

m is 1 or 2;

q is 1 or 2;

Q is absent, an amide, urea or urethane moiety;

L is a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms; and

X is hydroxy, amino or $-NR^8COR^9$ wherein R^8 and R^9 are independently hydrogen, alkyl or fluorinated alkyl.

57. (withdrawn) The electrophoretic display of Claim 56 wherein R is a fluorinated alkyl.

58. (previously presented) The electrophoretic display of Claim 56 wherein R is a fluoropolyether.

59. (withdrawn) The electrophoretic display of Claim 56 wherein R is a polymeric or oligomeric chain of Formula (R).

60. (withdrawn and currently amended) The electrophoretic display of Claim 59 wherein the open substituent positions on the main chain of Formula (R) are independently fluorine or fluorinated alkyl.

61. (previously presented) The electrophoretic display of Claim 56 wherein m is 2, q is 1, L is a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more nitrogen atoms.

62. (previously presented) The electrophoretic display of Claim 61 wherein L is a straight or branched alkylene chain optionally interrupted by one or more nitrogen atoms.

63. (withdrawn) The electrophoretic display of Claim 55 wherein said threshold promoter is represented by Formula T-2:

wherein

Q and Q' are independently absent, an amide, urea or urethane moiety;

L and L' are independently a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms;

X is a pyridinium ion;

Y is –OH or amino;

m is 1 or 2; and

q is 1 or 2.

64. (withdrawn) The electrophoretic display of Claim 63 wherein R is a fluorinated alkyl.

65. (withdrawn) The electrophoretic display of Claim 63 wherein R is a fluoropolyether.

66. (withdrawn) The electrophoretic display of Claim 63 wherein R is a polymeric or oligomeric chain of Formula (R).

67. (withdrawn and currently amended) The electrophoretic display of Claim 66 wherein the open substituent positions on the main chain of Formula (R) are independently fluorine or fluorinated alkyl.

68. (withdrawn) The electrophoretic display of Claim 63 wherein Y is –OH.

69. (withdrawn) The electrophoretic display of Claim 63 wherein said pyiridium ion is reacted with a counterion selected from the group consisting of $C_aF_{2a+1}SO_3^-$, $F(C_3F_6O)_dCF(CF_3)CO_2^-$ and $F(C_2F_4O)_dCF_2CO_2^-$ in which a is 1-12 and d is 1-20.

70. (original) The electrophoretic display of Claim 55 which is prepared by the microcup technology.

71. (original) The electrophoretic display of Claim 55 which is prepared by the microencapsulation process.

72. (withdrawn) The method of Claim 1 wherein said threshold promoter is represented by Formula T-4:
wherein
R is a fluoropolyether;
Q and Q' are independently absent, amide, urea or urethane;
L and L' are independently a straight or branched alkylene, alkylphenylene, fluorinated alkylene or fluorinated alkylphenylene chain optionally interrupted by one or more heteroatoms;
X and Y are independently hydroxyl or amino;
m and m' are independently 1 or 2; and
q and q' are independently 1 or 2.

73. (withdrawn) The method of Claim 72 wherein X and Y are independently hydroxyl.

74. (withdrawn) The method of Claim 73 wherein L and L' are independently an alkylene chain optionally interrupted by one or more nitrogen atoms, m, m', q and q' are all 1.

75. (new) The method of Claim 1 wherein said protective colloid is an amino- or hydroxy-functionalized fluorinated polymer or oligomer.

76. (new) The method of Claim 75 wherein said polymer or oligomer is derived from a fluorinated hydrocarbon, hydrofluoropolyether or perfluoropolyether.

77. (new) The method of Claim 1 further comprising the step of forming pigment-containing microparticles by emulsifying an internal phase comprising primary pigment particles and a reactive monomer or oligomer into a continuous phase comprising the protective colloid.

78. (new) The electrophoretic fluid of Claim 30 wherein said protective colloid is an amino- or hydroxy-functionalized fluorinated polymer or oligomer.

79. (new) The electrophoretic fluid of Claim 78 wherein said polymer or oligomer is derived from a fluorinated hydrocarbon, hydrofluoropolyether or perfluoropolyether.

80. (new) The electrophoretic fluid of Claim 30 wherein said pigment-containing microparticles are formed by emulsifying an internal phase comprising primary pigment particles and a reactive monomer or oligomer into a continuous phase comprising the protective colloid.

81. (new) The electrophoretic display of Claim 55 wherein said protective colloid is an amino- or hydroxy-functionalized fluorinated polymer or oligomer.

82. (new) The electrophoretic display of Claim 81 wherein said polymer or oligomer is derived from a fluorinated hydrocarbon, hydrofluoropolyether or perfluoropolyether.

83. (new) The electrophoretic display of Claim 55 wherein said pigment-containing microparticles are formed by emulsifying an internal phase comprising primary pigment particles and a reactive monomer or oligomer into a continuous phase comprising the protective colloid.